IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of (first named inventor): **Hemant CHASKAR**	Atty. Docket No.: 005288.00010
Serial No.: 09/892,611	Group Art Unit: 2142
Filed: June 28, 2001	Examiner: Blair, Douglas B.
For: Protocol To Determine Optimal Target Access Router For Seamless IP-Level Handover	Confirmation No.: 4861

APPEAL BRIEF (Third Corrected)

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Sir:

Applicants continue to disagree with various notices indicating that the description of claims is insufficient. Nevertheless, in order to advance the present case, Applicants provide this Third Corrected Appeal Brief, filed within the extended time period allowed based on the paper mailed October 31, 2006. **Please charge any necessary fees in connection with this Appeal Brief to our Deposit Account No. 19-0733.**

This is an Appeal Brief in accordance with 37 C.F.R. § 41.37 in support of Appellants' February 17, 2006, Notice of Appeal and Pre-Appeal Brief Request for Review, and is submitted in response to the Notice of Noncompliant Appeal Brief. Appeal is taken from the Final Office Action mailed September 21, 2005, and the Notice of Panel Decision from Pre-Appeal Brief Review mailed May 8, 2006.

I. REAL PARTY IN INTEREST

37 C.F.R. § 41.37(c)(1)(i)

The owner of this application, and the real party in interest, is **Nokia Corporation**.

II. RELATED APPEALS AND INTERFERENCES

37 C.F.R. § 41.37(c)(1)(ii)

There are no related appeals and interferences.

III. STATUS OF CLAIMS

37 C.F.R. § 41.37(c)(1)(iii)

Claims 1-9:	Canceled
Claims 10-35:	Rejected & Appealed
Claim 36:	Canceled
Claims 37-45:	Rejected & Appealed
Claims 46-51:	Canceled

IV. STATUS OF AMENDMENTS

37 C.F.R. § 41.37(c)(1)(iv)

No amendment has been filed subsequent to a final rejection in this case.

V. SUMMARY OF CLAIMED SUBJECT MATTER

37 C.F.R. § 41.37(c)(1)(v)

In making reference herein to various portions of the specification and drawings in order to explain the claimed invention, Appellant does not intend to limit the claims; all references to the specification and drawings are illustrative unless otherwise explicitly stated.

The present invention relates generally to telecommunications networks. More specifically, claims 10, 15, 30, 35, and 39 concern a mechanism for enabling seamless mobility in mobile telecommunications networks. *Specification*, p. 1, lines 4-6 (para. [01]).

By way of general introduction, telecommunication networks for mobile devices include cellular communication systems; mobile Internet Protocol (IP) networks; paging systems; and others. Cellular systems generally allow mobile terminals to move geographically by "handing off" localized communication links among transmission towers and associated base stations. Similarly, mobile IP networks allow IP-enabled devices such as wireless Personal Digital Assistants (PDAs) and mobile computers to move about geographically dispersed areas while maintaining a connection to the Internet. *Specification*, p. 1, lines 8-14 (para. [02]).

Mobile devices can provide both voice-based connections and IP connections using different base stations and infrastructures. For example, a Web-enabled cell phone might maintain a voice connection using a first transmission channel and maintain a mobile IP connection using a second (and independent) transmission channel, such that handoffs occur independently for the two channels. Alternatively, voice services can be combined with the IP service, such that a single connection is maintained for both services. Voice connections can also be provided over IP in a combined service. *Specification*, p. 1, lines 15-21 (para. [03]).

A mobile terminal MT operates within a service area served by *a base station (also called an access point or AP)*. The base station/access point is connected to *an access router (AR), which in turn connects to an Internet service provider (ISP)* that provides access to the Internet. Other base stations/access points may also be connected to the same access router, such that a common IP address can be used for mobile terminals even though the terminals may pass through different base station/access point service areas. In other words, although there may be a hand off of radio frequency channels when the mobile terminal moves between service areas, it might not be necessary to change the IP address used to communicate with the mobile terminal when the Internet connection is still served by the same access router. *Specification*, p. 2, lines - 10 (para. [05]), Fig. 1.

A second service area may be served by a separate base station/access point, which is in turn connected to a different access router. Due to the network topology, different access routers use different blocks of IP addresses for communicating with mobile terminals roaming within their associated service areas. If a mobile terminal (MT) moves from one access router service area to another access router service area, some mechanism is needed to hand off the Internet connection from the first access router to the second access router. Similarly, if two access router service areas are separated by a large logical distance (e.g., because they are connected to different ISPs), some coordination mechanism is needed to permit data transmitted to a terminal previously operating in the first service area to be forwarded to the second service area. *Specification*, p. 2, lines 11-20 (para. [06]), Fig. 1.

The invention as claimed in claim 10 provides a system and method to facilitate seamless handoffs in mobile networks, such as mobile IP networks. A first aspect of the invention enables an access router to dynamically learn about other access routers that are geographically adjacent

by receiving information from mobile terminals that move into the service area of the access router. A second aspect of the invention allows access routers to share capability information without requiring a centralized scheme (e.g., using a peer-to-peer approach). A third aspect of the invention allows a target access router to be selected and a handoff arranged on the basis of capability information associated with one or more target access routers and on the basis of the direction of movement of the mobile node. *Specification*, p. 5, lines 17-27 (para. [15]), Fig. 1.

With respect to independent claim 10, FIG. 3 shows a system employing various principles of the invention. As shown in FIG. 3, a first access router AR1 serves a first service area (not shown) in which a mobile terminal MT may be located. Although not explicitly shown in FIG. 3, it is assumed that each access router transmits and receives data packets through one or more base stations (access points) that cover corresponding geographic areas (`“detecting entry into an area served by two or more of the plurality of potential target access routers”).`[1] It is also assumed that each access router provides Internet-compatible connections (e.g., IP protocol compatibility) such that data packets received at each router can be forwarded to one or more mobile terminals within the corresponding service area. *Specification*, p. 6, lines 20-24 (para. [23]), Fig. 3.

There are various methods of detecting movement of a mobile terminal to a new service area. In one approach, the mobile terminal “helps” the access router by listening to beacons of neighboring base stations associated with different access routers. This decision made by the mobile terminal to start listening to these neighborhood beacons can be made by the mobile terminal or be initiated by the AR at a time when a handover is deemed necessary. For example, the current AR’s signal to the mobile terminal might be fading, or the mobile terminal’s signal to the current AR might be fading, or both. One of the two entities (mobile terminal or AR) or both might decide that a handover is necessary. *Specification*, p. 14, line 23 – p. 15, line 2 (para. [0047]).

As a mobile terminal MT moves into the area serviced by an access router, the mobile terminal transmits the IP address of the access router for the service area from which the mobile

[1] The claim language is discussed with respect to the specification. For ease of recognition, claim language is provided in `courier` font.

terminal is leaving. In other words, each mobile terminal passes to the next access router information concerning the previously used access router (the previous router's identity, i.e., its IP address) ("transmitting an address of the source access router from the mobile terminal to one or more of the potential target access routers"). An inference can be drawn that, by virtue of moving out of one router's service area and into another router's service area, the two routers are geographically adjacent. Once each access router knows about the other one, they can exchange capability information that can be used to select a target access router for future handoffs. *Specification*, p. 7, lines 9-22 (para. [24]). ("performing an IP handoff operation from the source access router to one of the plurality of potential target access routers on the basis of capability information received from one or more of the plurality of potential target access routers").

Each access router has an exchange function, which exchanges capability information between access routers in response to a learning function. For example, when mobile terminal MT is about to move out of a service area supported by access router 1 (AR1) and into the service area of AR2, the mobile terminal transmits to AR2 the IP address of the originating access router AR1. In response, the learning function of AR2 stores the IP address of AR1 into a capability map, and causes its exchange function to transmit a request (over the Internet, or through other means) to AR1 to exchange capability information. Thereafter, each access router's exchange function exchanges capability information concerning each respective router's capabilities. For example, if AR1 can support link bandwidths of 28 KBPS and AR2 can support link bandwidths of 56 KBPS, this information is stored in each access router's respective capability map. In this manner, each access router learns about capabilities of neighboring routers. *Specification*, p. 8, lines 1-13 (para. [26]).

Each access router has a selector function that selects target access routers for mobile terminals based on capability information stored in the access router's capability map. For example, if mobile terminal MT is about to move from a service area served by AR1 into a service area served by multiple target access routers (including, for example, AR2 and AR4), the selector function in AR1 consults the capability map of AR1 to determine which access router best suits the capabilities needed by mobile terminal MT. A movement detection scheme is used

to inform AR1 which ARs are reachable by the mobile terminal upon movement of the mobile terminal. Selection of target routers can thus be done based on policies stored in each router and based on capabilities of each access router, as compared with capabilities needed by each MT. *Specification*, p. 8, lines 14-23 (para. [27]).

With respect to <u>independent claim 15</u>, as shown in FIG. 3, a first access router AR1 serves a first service area (not shown) in which a mobile terminal MT may be located. Although not explicitly shown in FIG. 3, it is inherent that each access router transmits and receives data packets through one or more base stations (access points) that cover corresponding geographic areas to communicate with each MT (`"detecting a condition that a mobile terminal presently served by a first access router is entering an area served by a second access router;").` Each access router provides Internet-compatible connections (e.g., IP protocol compatibility) such that data packets received at each router can be forwarded to one or more mobile terminals within the corresponding service area. *Specification*, p. 6, lines 20-24 (para. [23]), Fig. 3.

There are various methods of detecting movement of a mobile terminal to a new service area. In one approach, the mobile terminal "helps" the access router by listening to beacons of neighboring base stations associated with different access routers. This decision made by the mobile terminal to start listening to these neighborhood beacons can be made by the mobile terminal or be initiated by the AR at a time when a handover is deemed necessary. For example, the current AR's signal to the mobile terminal might be fading, or the mobile terminal's signal to the current AR might be fading, or both. One of the two entities (mobile terminal or AR) or both might decide that a handover is necessary. *Specification*, p. 14, line 23 – p. 15, line 2 (para. [0047]).

As a mobile terminal MT moves into the area serviced by an access router, the mobile terminal transmits the IP address of the access router for the service area from which the mobile terminal is leaving. In other words, each mobile terminal passes to the next access router information concerning the previously used access router (the previous router's identity, i.e., its IP address) `("transmitting a network address of the first access router from the mobile terminal to the second access router").` An inference can be drawn that, by

virtue of moving out of one router's service area and into another router's service area, the two routers are geographically adjacent. *Specification*, p. 7, lines 12-18 (para. [0024]).

Once each access router knows about the other one, they can exchange capability information that can be used to select a target access router for future handoffs. *Specification*, p. 7, lines 9-22 (para. [24]). ("exchanging capability information between the first access router and the second access router, such that each access router learns capabilities of the other access router."). Each access router has an exchange function, which exchanges capability information between access routers in response to a learning function. For example, when mobile terminal MT is about to move out of a service area supported by access router 1 (AR1) and into the service area of AR2, the mobile terminal transmits to AR2 the IP address of the originating access router AR1. In response, the learning function of AR2 stores the IP address of AR1 into a capability map, and causes its exchange function to transmit a request (over the Internet, or through other means) to AR1 to exchange capability information. Thereafter, each access router's exchange function exchanges capability information concerning each respective router's capabilities. For example, if AR1 can support link bandwidths of 28 KBPS and AR2 can support link bandwidths of 56 KBPS, this information is stored in each access router's respective capability map. In this manner, each access router learns about capabilities of neighboring routers. *Specification*, p. 8, lines 1-13 (para. [26]).

With respect to <u>independent claim 30</u>, there are various methods of detecting movement of a mobile terminal to a new service area. In one approach, the mobile terminal "helps" the access router by listening to beacons of neighboring base stations associated with different access routers. This decision made by the mobile terminal to start listening to these neighborhood beacons can be made by the mobile terminal or be initiated by the AR at a time when a handover is deemed necessary. For example, the current AR's signal to the mobile terminal might be fading, or the mobile terminal's signal to the current AR might be fading, or both. One of the two entities (mobile terminal or AR) or both might decide that a handover is necessary. *Specification*, p. 14, line 23 – p. 15, line 2 (para. [0047]). ("receiving a request to initiate a handoff operation for a mobile terminal in the mobile IP network;").

When a mobile terminal hears signals from neighboring base stations or access points, it forwards this information back to its current serving AR. This information could be low-level link layer information from these base stations, or it could be the IP addresses of the ARs they are attached to, or both. This information is forwarded in its entirety to the AR to which the mobile terminal is currently attached. These base stations can rely on different transmission technologies. If the IP addresses of the potential target ARs are made available to the current router as described above, then a potential target AR list is immediately available to the current router. These form the list of ARs that the mobile terminal could be handed over to because these are the ARs that the mobile terminal can hear. The target router is chosen from this list based on their capabilities or, if there is more than one possible router for handover, it can be done based on some policy. *Specification*, page 15, lines 8-19 (para. [0048]. ("finding an optimal access router to receive the handoff operation for the mobile terminal by evaluating capability information for a plurality of access routers, wherein the capability information was previously obtained by exchanging information among access routers on the basis of information transmitted by one or more mobile terminals in the mobile IP network;").

With respect to <u>independent claim 35</u>, FIG. 7 illustrates a mobile terminal adapted to participate in handoff decisions in a mobile IP network comprising a plurality of access routers. FIG. 7 illustrates a transmit/receive circuit 702 capable of transmitting and receiving digital data within the mobile IP network, and a mobile IP handoff processing circuit 705 coupled to the transmit/receive circuit 702, wherein the mobile IP handoff processing circuit transmits a network address of a first access router in the mobile IP network to a second access router in the mobile IP network. FIG. 7 further illustrates a capability storage area 706 reflecting capabilities needed by the mobile terminal, wherein the mobile IP handoff processing circuit transmits one or more capabilities stored in the capabilities storage area to an access router in the mobile IP network. *Specification*, p. 17, lines 3-23 (para. [0052] – [0053]).

With respect to <u>independent claim 39</u>, FIG. 3 illustrates an access router for use in a mobile IP network having a plurality of access routers each of which routes IP packets among

mobile terminals in a service area, comprising a processor that executes computer-readable instructions. Claim 39 was included with the application as filed, and thus serves as additional support for such language.

As a mobile terminal MT moves into the area serviced by an access router, the mobile terminal transmits the IP address of the access router for the service area from which the mobile terminal is leaving. In other words, each mobile terminal passes to the next access router information concerning the previously used access router (the previous router's identity, i.e., its IP address). *Specification*, p. 7, lines 12-16 (para. [0024]). ("`receiving from a mobile terminal a network address of another access router in communication with the mobile terminal;`").

Exchange functions of each access router exchange capability information between two access routers in response to a learning function. For example, when mobile terminal MT is about to move out of the service area supported by AR1 and into the service area of AR2, the mobile terminal transmits to AR2 the IP address (in this case, 10.1.0.0) of the originating access router AR1. In response, learning function 307 stores the IP address of AR1 into capability map 308, and causes exchange function 305 to transmit a request (over the Internet, or through other means) to AR1 to exchange capability information. Thereafter, exchange functions 303 and 305 of the respective access routers exchange capability information (described in more detail below) concerning each respective router's capabilities. *Specification*, p. 8, lines 1-10 (para. [0026]). ("`storing the network address into a capabilities map that defines capabilities of geographically proximate access routers;`").

A selector function in each access router selects target access routers for mobile terminals based on capability information stored in capability maps 304 and 308 respectively. For example, if mobile terminal MT is about to move from a service area served by AR1 into a service area served by multiple target access routers (including, for example, AR2 and AR4), selector function 302 in AR1 consults capability map 304 to determine which access router best suits the capabilities needed by mobile terminal MT. *Specification*, p. 8, lines 14-23 (para. [0027]) ("`using the stored network address to make a handoff`

`decision concerning a second mobile terminal in the mobile IP network.`").

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

37 C.F.R. § 41.37(c)(1)(vi)

The ground of rejection to be reviewed on appeal includes the rejection of claims 10-45 under 35 U.S.C. § 103(a) as being unpatentable over La Porta *et al.* (U.S. Pat. No. 6,654,359, hereinafter La Porta) in view of Rom (U.S. Pat. No. 6,360,264).

VII. ARGUMENT

37 C.F.R. § 41.37(c)(1)(vii)

1. Claims 10-35 and 37-45 are not obvious over *La Porta* in view of *Rom*.

The Final Office Action mailed September 21, 2005, and the Advisory Action mailed January 9, 2006, each rejects claims 10-35 and 37-45 as being obvious over La Porta in view of Rom. Appellants respectfully traverse this rejection.

In order to establish a *prima facie* rejection under § 103(a), three criteria must exist: 1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings; 2) there must be a reasonable expectation of success; and 3) the prior art reference(s) must teach or suggest all the claim limitations. *See* MPEP § 706.02 (j); *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991). In the present case, however, even if the references are combined, La Porta and/or Rom do not teach or suggest all the recitations of any claim.

Claim 10 and respective dependent claims

Claim 10 recites:

> In a mobile terminal, a method of facilitating a mobile Internet Protocol (IP) handoff from a source access router to one of a plurality of potential target access routers, the method comprising the steps of:
>
> (1) detecting entry into an area served by two or more of the plurality of potential target access routers;
>
> (2) transmitting an address of the source access router from the mobile terminal to one or more of the potential target access routers; and
>
> (3) performing an IP handoff operation from the source access router to one of the plurality of potential target access routers on the basis of capability information received from one or more of the plurality of potential target access routers.

Neither La Porta nor Rom describe detecting entry into an area served by two or more of the plurality of potential target access routers, recited in claim 10. The Office Action alleges that such a feature is described in La Porta at col. 14, line 39 – col. 16, line 8. However, upon review of the cited portion of La Porta, Appellant submits that La Porta does not *detect entry into an area served by two more of the plurality of potential target access routers*, as claimed. While La Porta, at the cited portion, describes path setup messages, La Porta does not teach or suggest that an area may be served by two or more potential target access routers, as claimed. Having also reviewed the remaining portions of La Porta, Appellants find no teaching or suggestion in La Porta that the system of La Porta detects entry into an area served by two or more of the plurality of potential target access routers, as claimed.

Indeed, La Porta's only references to access routers is that "base stations maintain or *access* router capabilities to interface with the wired portion of the subnet…." *See* La Porta at col. 16, lines 19-26; col. 18, lines 18-24; col. 20, lines 49-55; and col. 25, lines 44-51. Stated another way, La Porta does not refer to an "access router" as a device, but rather refers to a base station (i.e., access point) that accesses a router's capabilities. La Porta uses the word "access" as a verb, not a noun. Thus even if combined, La Porta and Rom do not teach or suggest detecting entry into an area served by two or more of the plurality of potential target access routers, as recited in claim 10.

Furthermore, neither La Porta or Rom teach or suggest "performing an IP handoff operation from the source access router to one of the plurality of potential target access routers *on the basis of capability information received from one or more of the plurality of potential target access routers*," as claimed.

In addition, the Office Action further alleges that Rom teaches or suggests the claimed feature of "performing an IP handoff operation from the source access router to one of the plurality of potential target access routers on the basis of capability information received from one or more of the plurality of potential target access routers" at col. 4, lines 4-23. However, Rom does not use *access routers*, but instead uses *access points* in an entirely different type of wireless network. Those of skill in the art will appreciate that access points and access routers serve different functions, and are therefore not interchangeable. See, e.g., H. Newton, *Newton's*

Telecom Dictionary: The Official Dictionary of Telecommunications, Networking and the Internet, 17th Ed., 2001 (Access Point: Network device that interconnects a wireless radio network to a wired local area network; Access Router: An access device with built-in basic routing-protocol support, specifically designed to allow remote LAN access to corporate backbone networks.). Rom merely uses the access points in a traditional, conventional manner, and thus the access points of Rom cannot be considered access routers.

Access points are intra-domain bridge devices (i.e., used within a single domain), whereas access routers are inter-domain devices (i.e., used to interconnect and route traffic among multiple domains). Those of skill in the art understand them to have different functions, different hardware, and different purposes. They are simply not interchangeable as implied by the Office Action, and thus there is no motivation to combine the references in the first place. Indeed, *Appellants even go so far as to differentiate between access points and access routers in the specification as filed—a distinction the examiner has repeatedly ignored*. Specification, p. 2, para. [05]. The Federal Circuit has emphasized that claims must be interpreted in light of the specification. See Phillips v. AWH Corp., 415 F.3d 1303 (Fed. Cir. 2005). Rom therefore fails to cure the deficiencies of La Porta, and also fails to teach or suggest step (3) of claim 10 as alleged by the Office Action.

For at least each of the above reasons, the Office Action fails to establish a *prima facie* case of obviousness, and claim 10 is allowable over La Porta in view of Rom. Each of dependent claims 11-14 is allowable for at least the same reasons as independent claim 10.

Claim 15 and respective dependent claims

Independent claim 15 recites:

> 15. (original) A method of sharing capability information in a mobile communication network for use in making handoff decisions among access routers, comprising the steps of:
>
> (1) detecting a condition that a mobile terminal presently served by a first access router is entering an area served by a second access router;
>
> (2) transmitting a network address of the first access router from the mobile terminal to the second access router; and
>
> (3) exchanging capability information between the first access router and the second access router, such that each access router learns capabilities of the other access router.

The Office Action alleges that Rom teaches or suggests step (3), that of exchanging capability information between the first access router and the second access router, such that each access router learns capabilities of the other access router. However, as discussed above with respect to claim 10, Rom does not teach or suggest the use of access routers. Furthermore, La Porta and Rom do not teach or suggest transmitting capability information between two devices even alleged as access routers, but instead appear to transmit information through the device attempting to connect through one of the devices. Thus, the Office Action does not establish a *prima facie* case of obviousness, and claim 15 is allowable over La Porta in view of Rom. Dependent claims 16-29 are allowable for at least the same reasons as claim 15.

In addition, with respect to claim 19, neither Rom nor La Porta teach or suggest that the capability information comprises dynamic loading conditions associated with one of the routers. Indeed, Rom makes no mention of dynamic loading conditions.

With respect to claim 20, Rom and La Porta do not teach or suggest that the capability information comprises security schemes supported by one of the routers. Instead, Rom merely discusses known load balancing techniques.

With respect to claim 22, Rom and La Porta do not teach or suggest that the capability information comprises signal transmission technologies supported by a base station associated with one of the access routers.

With respect to claims 23 and 27, Rom and La Porta do not teach or suggest that the capability information comprises a cost of access using one of the access routers.

With respect to claims 24 and 29, as discussed above with respect to claim 10, Rom and La Porta do not detect a condition that the mobile terminal is entering an area served by at least two potential target access routers. Claim 24 is allowable for additional reasons similar to claim 10, as well as based on the allowability of claim 15.

With respect to claim 25, Rom and La Porta does not purge capability information based on an elapsed period of time, as claimed.

<u>Claim 30 and respective dependent claims</u>

As with claim 10, claim 30 recites finding an optimal access router to receive the handoff operation for the mobile terminal *by evaluating capability information* for a *plurality of access routers*. As discussed above, neither La Porta nor Rom teach or suggest such a feature.

The Office alleges that claim 30 is rejected for the same reasons as claims 15-29, the rejections of which Applicant has addressed above. Claim 30 is therefore allowable over the art of record, and dependent claims 31-34 are allowable for at least the same reasons as independent claim 30.

Claim 35 and respective dependent claims

Claim 35 recites "a capabilities storage area reflecting capabilities needed by the mobile terminal, wherein the mobile IP handoff processing circuit transmits one or more capabilities stored in the capabilities storage area to an access router in the mobile IP network." La Porta does not teach or suggest such a feature, and as discussed above, Rom does not teach or suggest any communications with an access router. Claim 35 is thus allowable over the art of record. Claims 37 and 38 are allowable for at least the same reasons as amended claim 35.

Claim 39 and respective dependent claims

Claim 39 recites:

> 39. (original) An access router for use in a mobile IP network having a plurality of access routers each of which routes IP packets among mobile terminals in a service area, comprising a processor that executes computer-readable instructions for performing the steps of:
>
> (1) receiving from a mobile terminal a network address of another access router in communication with the mobile terminal;
>
> (2) storing the network address into a capabilities map that defines capabilities of geographically proximate access routers; and
>
> (3) using the stored network address to make a handoff decision concerning a second mobile terminal in the mobile IP network.

The Office Action alleges that claims 39-45 feature limitations found in claims 15-29, and are therefore rejected for the same reasons as claims 15-29. However, none of claims 15-29 recite *a capabilities map stored in an access router* as recited in claim 39. Thus, the Office has failed to establish a prima facie rejection of claim 39, because the rejection fails to address all the recitations of claim 39. Applicant has thus not been accorded a fair opportunity to prosecute

claim 39. In any event, the cited references do not teach or suggest the capabilities map, as claimed.

CONCLUSION

For all of the foregoing reasons, Appellants respectfully submit that the final rejection of the claims referenced in section VI, above, is/are improper and should be reversed.

Respectfully submitted,

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CLAIMS APPENDIX

37 C.F.R. § 41.37(c)(1)(viii)

10. (original) In a mobile terminal, a method of facilitating a mobile Internet Protocol (IP) handoff from a source access router to one of a plurality of potential target access routers, the method comprising the steps of:

(1) detecting entry into an area served by two or more of the plurality of potential target access routers;

(2) transmitting an address of the source access router from the mobile terminal to one or more of the potential target access routers; and

(3) performing an IP handoff operation from the source access router to one of the plurality of potential target access routers on the basis of capability information received from one or more of the plurality of potential target access routers.

11. (original) The method of claim 10, wherein step (3) is performed in the mobile terminal by selecting a target access router on the basis of bandwidth capabilities required by the mobile terminal.

12. (original) The method of claim 10, wherein step (3) is performed by the source access router on the basis of capability information received by the source access router from the one or more plurality of potential target access routers.

13. (original) The method of claim 10, wherein step (3) comprises the step of performing the IP handoff to one of the plurality of potential target access routers that best matches capabilities required by the mobile terminal.

14. (original) The method of claim 10, wherein step (3) is performed independently of any voice-channel handoff operation that is also supported by the mobile terminal.

15. (original) A method of sharing capability information in a mobile communication network for use in making handoff decisions among access routers, comprising the steps of:

(1) detecting a condition that a mobile terminal presently served by a first access router is entering an area served by a second access router;

(2) transmitting a network address of the first access router from the mobile terminal to the second access router; and

(3) exchanging capability information between the first access router and the second access router, such that each access router learns capabilities of the other access router.

16. (original) The method of claim 15, further comprising the step of:

(4) using the exchanged capability information from step (3) to make a handoff decision for a mobile IP terminal.

17. (original) The method of claim 15, wherein step (3) is performed by transmitting an IP packet from the second access router to the first access router requesting capability

information and receiving an IP packet from the first access router containing capability information describing capabilities of the first access router.

18. (original) The method of claim 15, wherein the capability information comprises a bandwidth supported by one of the routers.

19. (original) The method of claim 15, wherein the capability information comprises dynamic loading conditions associated with one of the routers.

20. (original) The method of claim 15, wherein the capability information comprises security schemes supported by one of the routers.

21. (original) The method of claim 15, wherein the capability information comprises the geographic location of one of the access routers.

22. (original) The method of claim 15, wherein the capability information comprises signal transmission technologies supported by a base station associated with one of the access routers.

23. (original) The method of claim 15, wherein the capability information comprises a cost of access using one of the access routers.

24. (original) The method of claim 15,

wherein step (1) comprises the step of detecting a condition that the mobile terminal is entering an area served by at least two potential target access routers;

wherein step (3) comprises the step of exchanging information concerning both of the at least two potential target access routers; and

further including the step of selecting one of at least two potential target access routers on the basis of the capability information exchanged in step (3).

25. (original) The method of claim 15, further comprising the step of:

(4) purging capability information of the first access router if no handoffs from the first access router have been detected within a predetermined time period.

26. (original) The method of claim 16, wherein step (4) comprises the step of selecting an optimum target router on the basis of a predetermined policy.

27. (original) The method of claim 26, wherein the policy specifies that a lowest cost access router should be selected.

28. (original) The method of claim 15, further comprising the step of:

(4) redirecting one or more mobile terminals away from a loaded access router to a less loaded access router on the basis of capability information obtained as a result of step (3).

29. (original) The method of claim 15, wherein step (1) comprises the step of detecting that the mobile terminal is entering an area served by at least two potential target access routers, and further comprising the step of:

(4) selecting one of the two potential target access routers on the basis of a best match between a capability dictated by an application program executing on the mobile terminal and the capabilities of the two potential target access routers.

30. (original) A method of handing off a mobile terminal in a mobile IP network comprising a plurality of access routers each associated with a service area, the method comprising the steps of:

(1) receiving a request to initiate a handoff operation for a mobile terminal in the mobile IP network;

(2) finding an optimal access router to receive the handoff operation for the mobile terminal by evaluating capability information for a plurality of access routers, wherein the capability information was previously obtained by exchanging information among access routers on the basis of information transmitted by one or more mobile terminals in the mobile IP network; and

(3) effecting the handoff operation to the optimal access router.

31. (original) The method of claim 30, wherein step (2) comprises the step of comparing capability requirements associated with the mobile terminal in step (1) with dynamic capability information associated with each of the plurality of access routers.

32. (original) The method of claim 30, wherein step (2) comprises the step of comparing bandwidth requirements of the mobile terminal with bandwidth capabilities of each access router.

33. (original) The method of claim 30, wherein step (2) comprises the step of selecting an access router on the basis of the cost of access.

34. (original) The method of claim 30, wherein step (2) comprises the step of selecting an access router on the basis of a security scheme.

35. (Currently Amended) A mobile terminal adapted to participate in handoff decisions in a mobile IP network comprising a plurality of access routers, comprising:

a transmit/receive circuit capable of transmitting and receiving digital data within the mobile IP network;

a mobile IP handoff processing circuit coupled to the transmit/receive circuit, wherein the mobile IP handoff processing circuit transmits a network address of a first access router in the mobile IP network to a second access router in the mobile IP network, and

a capabilities storage area reflecting capabilities needed by the mobile terminal, wherein the mobile IP handoff processing circuit transmits one or more capabilities stored in the capabilities storage area to an access router in the mobile IP network.

37. (original) The mobile terminal of claim 35, wherein the mobile IP processing circuit transmits a bandwidth requirement that is dependent on an application that is presently executing on the mobile terminal.

38. (original) The mobile terminal of claim 35, further comprising a signal strength detector coupled to the transmit/receive circuit and to the mobile IP handoff processing circuit, wherein the mobile IP handoff processing circuit in response to detecting that signal strength has dropped below a threshold, initiates a handoff process within the mobile IP network.

39. (original) An access router for use in a mobile IP network having a plurality of access routers each of which routes IP packets among mobile terminals in a service area, comprising a processor that executes computer-readable instructions for performing the steps of:

(1) receiving from a mobile terminal a network address of another access router in communication with the mobile terminal;

(2) storing the network address into a capabilities map that defines capabilities of geographically proximate access routers; and

(3) using the stored network address to make a handoff decision concerning a second mobile terminal in the mobile IP network.

40. (original) The access router of claim 39, wherein the processor further executes computer-readable instructions that perform the step of:

(4) exchanging capabilities information with the another access router, such that the access router and the another access router become aware of the others' capabilities on the basis of the network address received from the mobile terminal.

41. (original) The access router of claim 40, wherein the processor executes computer-readable instructions that exchange bandwidth capacity information between the access router and the another access router, wherein the instructions in step (3) select an access router on the basis of the bandwidth capacity information.

42. (original) The access router of claim 40, wherein the processor executes computer-readable instructions that exchange dynamic loading information between the access router and the another access router, wherein the instructions in step (3) select an access router on the basis of the dynamic loading information.

43. (original) The access router of claim 40, wherein the processor executes computer-readable instructions that make a handoff decision concerning a second mobile terminal in the mobile IP network on the basis of a policy stored in the access router.

44. (original) The access router of claim 43, wherein the policy results in selection of an access router on the basis of access cost.

45. (original) The access router of claim 40, wherein the processor executes computer-readable instructions that make a handoff decision by comparing capability requirements received from a second mobile terminal with capability information previously obtained in step (4).

EVIDENCE APPENDIX

37 C.F.R. § 41.37(c)(1)(ix)

None.

RELATED PROCEEDINGS APPENDIX

37 C.F.R. § 41.37(c)(1)(x)

None.